

# On the Taxonomy and Biogeography of *Stenus* (s. str.) *erythrocnemus* Eppelsheim and Related Species (Insecta: Coleoptera: Staphylinidae)

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**Abstract.** Material previously identified as *Stenus erythrocnemus* Eppelsheim, *S. anatolicus* Puthz, and *S. maculiger* Weise is revised with special reference to the internal structures of the aedeagus. Three new species of *Stenus* s. str. are described, illustrated, and distinguished from similar congeners: *S. cypriacus* sp. n. (Cyprus), *S. distortus* sp. n. (Anatolia), and *S. prominens* sp. n. (Lebanon, Israel). The distributions of *S. cypriacus*, *S. distortus*, *S. erythrocnemus*, *S. anatolicus*, and *S. maculiger* are mapped. The morphological variation of the male sexual characters of *S. erythrocnemus* and *S. maculiger* is illustrated and discussed.

**Key words.** Palaeartic – Europe – Turkey – Cyprus – Lebanon – new species – distribution

## 1. INTRODUCTION

Among the Palaeartic species of the subgenus *Stenus* Latreille with spotted elytra, a species group can be identified which is characterized by a conspicuous – evidently synapomorphic – sclerotized basal structure in the internal sac of the aedeagus. In the Western Palaeartic, this group comprises *Stenus erythrocnemus* Eppelsheim, *S. maculiger* Weise, *S. anatolicus* Puthz, and *S. sacramontis* Puthz. The sclerotized internal structures of *S. anatolicus*, *S. erythrocnemus*, and *S. sacramontis* were figured by PUTHZ (1970a, b), but their intra- and interspecific variation has never been studied.

When comparing recently collected material of *S. anatolicus* from southern Anatolia with males previously identified as *S. anatolicus* and recorded as such from Cyprus (ASSING & WUNDERLE 2001), I became aware of some evident differences, not only in the size and shape of the median lobe, but especially in the morphology of the basal internal structure of the aedeagus. A subsequent more systematic study of the internal structures of males previously identified as *S. erythrocnemus* and *S. anatolicus* from several public and private collections then revealed the existence of three undescribed species, one from Cyprus, one from Anatolia, and one from Lebanon and Israel.

## 2. MATERIAL AND MEASUREMENTS

The material treated in this study is deposited in the following public and private collections:

FMNH Field Museum of Natural History, Chicago  
(A. Newton)

MHNG	Muséum d'Histoire Naturelle, Genève (G. Cuccodoro)
NHMW	Naturhistorisches Museum Wien (H. Schillhammer)
UH	University of Haifa
cAss	author's private collection
cFel	private collection B. Feldmann, Münster
cPut	private collection V. Puthz, Schlitz
cRos	private collection A. Rose, Oldenburg
cSch	private collection M. Schülke, Berlin
cWun	private collection P. Wunderle, Mönchengladbach

The measurements are given in mm and abbreviated as follows: HW: head width across (and including) eyes; PW: maximal width of pronotum; PL: length of pronotum along median line; EL: length of elytra from apex of scutellum to elytral hind margin; EW: width of elytra; ML: length of median lobe of aedeagus.

## 3. STENUS (S. STR.) ERYTHROCNEMUS EPPELSHEIM AND RELATED SPECIES

### 3.1. *Stenus anatolicus* Puthz (Fig. 1, Map 1)

**Types examined:** Paratype ♂: Anatolia mer., Korge & Heinz leg. / Pisid. Taurus, Bozburun, 1600-2000m, 20.VII.65 / ♂ Paratype / *Stenus anatolicus* n. sp. det. V. Puthz 1968 (cPut). Two examined paratypes from Maraş are not conspecific with the paratype from Bozburun, which was collected together with the holotype, and are now listed as paratypes of *S. distortus* sp. n. (see below).

**Additional material examined:**

**Turkey:** Muğla: 1♂, Dalaman, 27.V.1991, leg. Schömann & Schillhammer (cPut). Antalya: 1♂, Fakircali, 22 km NE Demirtas, 600-700m, 4.V.1997, leg. Schulz, Vock & Sanetra (cAss); 1♂, 1♀, E Kumluca, 36°21'50N, 30°22'27E, 385m, stream bank, 3.IV.2002, leg. Assing & Wunderle (cAss); 1♀, SSW Antalya, Çirali, 36°25N, 30°28E, 20-50m, stream bank, 4.IV.2002, leg. Assing & Wunderle (cAss); 1♂, Kemer, 3.-15.VII.1989, leg. Schmid (cPut); 1♂, 1♀, Bey Dağları, V.1968, leg. Fagel (cPut); 1♀, 3 km W Çirali, 36°25'27N, 30°26'41E, 71m, stream bank, 28.III.2001, leg. Rose (cRos).

Isparta: 1♂, S Eğridir, Dedegöl Dağ, N-slope, 1300-1800m, 28.-29.VII.1971, leg. Heinz (cPut).

Mersin: 7♂♂, 2♀♀, Haciiskakli, 27.IV.1978, leg. Besuchet & Löbl (MHNG, cPut, cAss).

Mersin or Karaman: 1♂, S Karaman, Sertavul pass, ca. 1600m, 13.V.1970, leg. Zwick (cPut).

**Locality ambiguous:** 1♂: "Yeniköy, Toros", 30.VIII.1947 (cPut); 1♀, same data, but 29.-31.VII.1947 (cPut).

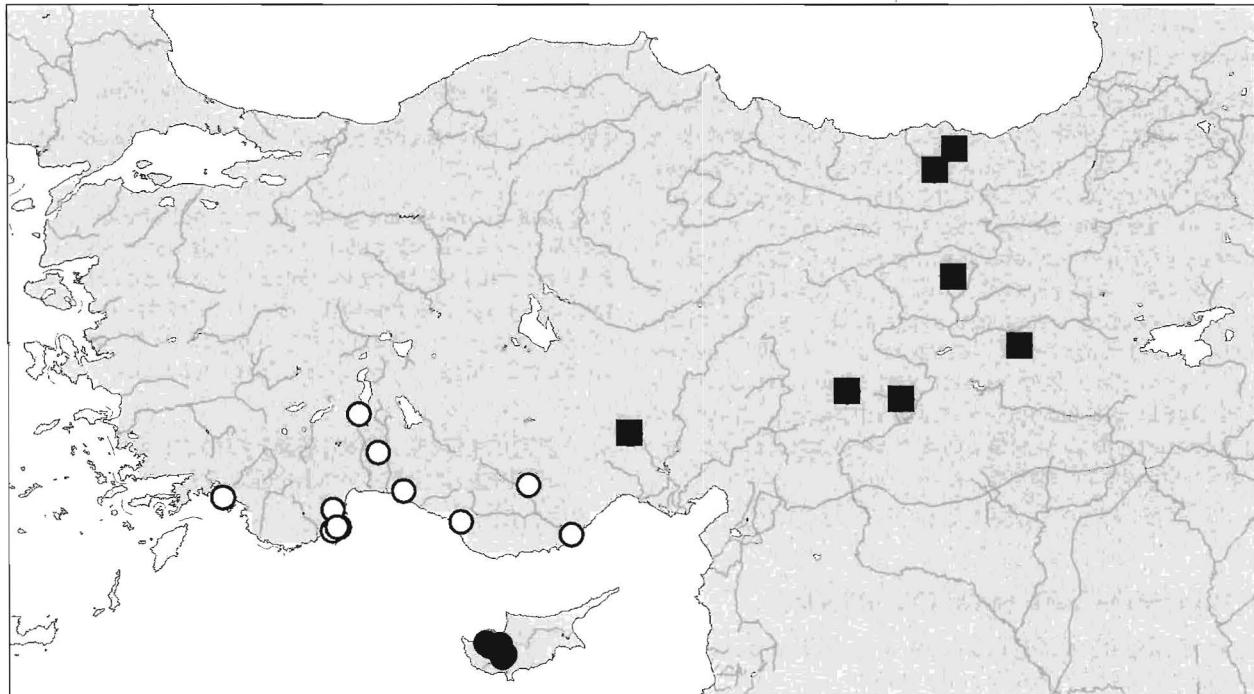
**Measurements (mm) and ratios (range; n=7):** HW: 0.91-0.98; PW: 0.68-0.72; PL: 0.76-0.83; EL: 0.92-1.03; EW: 1.01-1.10; ML: 0.86-0.92; HW/PW: 1.30-1.35; PL/PW: 1.08-1.15; EL/PL: 1.22-1.29; EL/EW: 0.90-0.94.

**Comments:** This species has been confounded with various other congeners, especially with the following three undescribed species and with *S. erythrocnemus*. Even the paratypes from Maraş are not conspecific with the holotype (see types of *S. distortus* sp. n.). Among the closely related species, *S. anatolicus* is identified by the shape of the aedeagus and by the untwisted basal internal structure of the median lobe (Fig. 1). For additional, but less reliable characters see the remarks below the following species. A detailed description of the external characters is given by PUTHZ (1970a).

**Distribution:** The distribution of *Stenus anatolicus* is apparently confined to southwestern Turkey from Muğla in the west to central Mersin in the east (Map 1), a distribution pattern not uncommon among Turkish Staphylinidae. Records from other regions refer to one of the following species.

### 3.2. *Stenus (s. str.) cypriacus* sp. n. (Figs. 2, 7, Map 1)

**Types:** Holotype ♂: CYPRUS – S Platres, Moniatis, Bachtal, Bachufer, 700m, 12.IV.1995, Assing / Holotypus ♂ *Stenus cypriacus* sp. n. det. V. Assing 2002 (cAss). Paratypes: 5♀♀: same data as holotype (cAss); 1♂: same data as holotype, but 07.IV.1995 (cAss); 2♂♂, 3♀♀: Cyprus, Commanderia, B8 b. Moniatis, 750m, Bachschlucht, 2.-12.4.95, P. Wunderle (cWun); 1♂, 1♀: Chypre, 700m, Kalopanayiotis, 17.VII.1977, C. Besuchet (MHNG); 1♂: CIPRO Val. Cedri, m. 1300m, 25.4.63, Henrot-Cerruti (cPut); 1♂: Cypr. Stavros, 18.-



**Map 1:** Distributions of *Stenus anatolicus* Puthz (open circles), *S. cypriacus* sp. n. (filled circles), and *S. distortus* sp. n. (black squares) in Turkey and Cyprus, based on examined material.

19.7.39, Håkan Lindb. / Field Mus. Nat. Hist. 1972, Ludwig Benick Colln. Acc. Z-14, 869 (FMNH); 1♀: ZYPERN, Mesopotamos, 32°54'34°53', 5.5.74, MALLICKY (cPut); 1♂: Troodos, 11.6.1963, leg. T-E. Leiler (cWun).

**Description:** Measurements (mm) and ratios (range; n=7): HW: 0.86 - 0.94; PW: 0.65 - 0.69; PL: 0.71 - 0.76; EL: 0.91 - 0.98; EW: 0.98 - 1.06; ML: 0.72 - 0.76; HW/PW: 1.33 - 1.39; PL/PW: 1.09 - 1.16; EL/PL: 1.22 - 1.30; EL/EW: 0.91 - 0.94.

External characters as in *Stenus anatolicus* (Fig. 7), but of smaller average size (see measurements) and antero-lateral tubercles on pronotum mostly obsolete. (In *S. anatolicus* the tubercles are usually distinct.) Bases of femora (as in *S. anatolicus*) usually distinctly lighter (yellowish to reddish brown) than apical halves.

♂: secondary sexual characters similar to those in *S. anatolicus*: sternite VI slightly flattened and with weakly concave posterior margin; sternite VII with relatively long and dense testaceous pubescence, shallowly, but extensively impressed in posterior half, posterior margin broadly and distinctly concave; sternite VIII weakly impressed before the broadly concave posterior margin; sternite IX similar to that of *S. anatolicus*; aedeagus of similar general morphology as in *S. anatolicus*, but distinctly smaller (see measurements and Fig. 2), apically more abruptly narrowed, and basal internal structures of completely different shape (Fig. 2).

**Etymology:** The name is an adjective and refers to the fact that the species is apparently endemic to Cyprus.

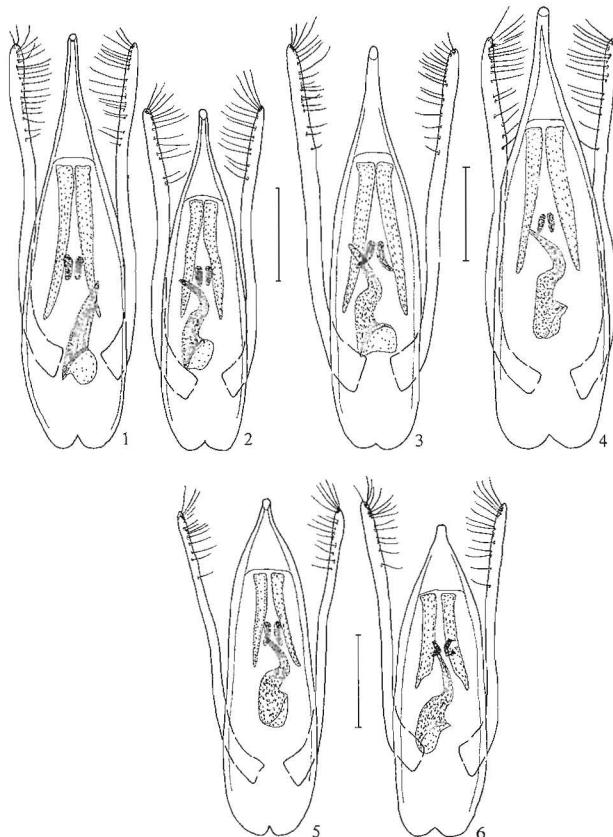
**Comparative notes:** In the related species with a similarly shaped aedeagus (*S. anatolicus*, *S. distortus*, *S. prominens*), the median lobe of the aedeagus is distinctly larger (see measurements and figures), the basal internal structure of the internal sac is of completely different shape (*S. anatolicus*) or smaller and more slender (*S. prominens*, *S. distortus*), the antero-lateral tubercles on the pronotum are usually more distinct (*S. anatolicus*, *S. distortus*), the size is on average larger (see measurements), and the femoral bases are not distinctly lighter than the apices (*S. distortus*).

**Distribution:** *Stenus cypriacus* is presumably endemic to Cyprus (Map 1). It is known from several localities, but according to personal observations it is not abundant. The records of *S. guttula* Müller in BAUDI DI SELVE (1870) and of *S. anatolicus* in ASSING & WUNDERLE (2001) refer to this species.

### 3.3. *Stenus (s. str.) distortus* sp. n. (Fig. 3, Map 1)

*Stenus anatolicus* Puthz, 1970a (PUTHZ 1970a: 22ff) partim.

**Types:** Holotype ♂: TR – bor., Torul, 9.6.1994, leg. Scoupy / Holotypus ♂ *Stenus distortus* sp. n. det. V. Assing 2002 (cAss). Paratypes: 1♂, 4♀♀: same data as holotype (cFel, cAss); 1♂: Turkey, 2.8.86, Maçka -> Sumela, leg. Feldmann (cFel); 1♂, Quelle am Tunnel vor Sürgü, Taurus / 13.V.1970, Zwick leg. / SO-Anatolien, Ost-Taurus bei Sürgü, 13.V.1970, Zwick (cPut); 2♂♂, 3♀♀: Anatolia mer., Heinz leg. / Höhle an z.T. subterraneum Fluß, ca. 61 km südl. v. Bingöl, 9.VII.1974 (cPut, cAss); 1♂: Türkei, Taurus, Bolkar Daglari, Umg. Ciftehan (Flußenfer, ca. 1500 mNN), 26.VI.1990, leg. Zeuner (cPut); 1♂: ca. 80km NW Maraş, Türkei, Zwick leg. / 16.V.1970, Bach a. d. Schneegr. / ANATOLIEN, 10.-22.5.1970, leg. Zwick (cPut); 1♂, Türkei, 17.5.1969, Maraş, leg. Wewalka (cPut); 1♂, 3♀♀: TURKEY: 14.-19.vii.2000, Adiyaman prov.; Nemrut Dağı Mts., Karadut env., I. Smatana leg. (cSch, cAss); 1♂, 1♀: Maraş, 17.5.69, leg. Wewalka / Paratype / *Stenus anatolicus* n. sp. det. V. Puthz 1970 (MHNG).



Figs. 1-6: Aedeagus of *Stenus anatolicus* Puthz (1), *S. cypriacus* sp. n. (2), *S. distortus* sp. n. (3), *S. prominens* sp. n. (4), *S. erythrocnemus* Eppelsheim (5), and *S. maculiger* Weise (6). Scale: 0.2 mm.

**Description:** Measurements (mm) and ratios (range; n=7): HW: 0.91 - 1.00; PW: 0.71 - 0.79; PL: 0.77 - 0.89; EL: 0.95 - 1.09; EW: 1.06 - 1.16; ML: 0.83 - 0.94;

HW/PW: 1.25 - 1.35; PL/PW: 1.06 - 1.17; EL/PL: 1.19 - 1.29; EL/EW: 0.88 - 0.94.

Externally highly similar to *S. anatolicus*, but femoral bases usually not or only indistinctly lighter than apical halves and pronotum on average wider (see measurements). ♂: aedeagus of similar shape and size, but basal internal structure twisted, of completely different shape (Fig. 3).

**Etymology:** The name (Lat., adj.: twisted) refers to the shape of the basal internal structure of the aedeagus, which readily separates this species from *S. anatolicus*, with which it was previously confused.

**Comparative notes:** For separation from *S. anatolicus* see description. *S. cypriacus* has a smaller aedeagus with a smaller and more slender basal internal structure; in addition, the body is on average smaller (little overlap, see measurements). In *S. prominens*, the apex of the median lobe of the aedeagus clearly extends beyond the parameres. In both *S. cypriacus* and *S. prominens* the femora are basally lighter and the antero-lateral tubercles on the pronotum are indistinct or obsolete.

**Distribution:** *Stenus distortus* is known from northern, central southern, and eastern Anatolia (Gümüşhane, Trabzon, Malatya, Bingöl or Diyarbakir, Niğde); its known distribution does not overlap with that of *S. anatolicus* and *S. erythrocnemus* (Map 1).

### 3.4. *Stenus* (s. str.) *prominens* sp. n. (Fig. 4)

**Types:** Holotype ♂: LIBANON, Touaite / Holotypus ♂ *Stenus prominens* sp. n. det. V. Assing 2002 (cPut). Paratypes: 1♀: Libanon, VI.1995, Ehden, 1500m, Horch Ehden, Bach, leg. C. Reuter (cFel); 1♂: ISRAEL, Baniyas, 1.VII.1986, A. Shlagman / G. Haghebaert coll. & det., *Stenus* s. str. *guttula* Müll. (UH).

External morphology as in *S. anatolicus*, but with indistinct or obsolete antero-lateral pronotal tubercles and with basal halves of femora testaceous to rufous. ♂: median lobe of aedeagus large, apically distinctly extending beyond parameral apices; basal internal structure twisted (Fig. 4).

**Description:** Measurements (mm) and ratios (holotype, ♂ paratype): HW: 1.04, 1.01; PW: 0.77, 0.76; PL: 0.85, 0.85; EL: 0.98, 1.00; EW: 1.07, 1.00; ML: 0.94, 0.94; HW/PW: 1.35, 1.34; PL/PW: 1.10, 1.12; EL/PL: 1.16, 1.18; EL/EW: 0.92, 0.92.

**Etymology:** The name (Lat., adj.: protruding, exceeding, standing out) refers to the long apex of the median lobe of the aedeagus, a character distinguishing this species from its closely related congeners.

**Comparative notes and discussion:** From the other Eastern Mediterranean representatives of the *S. eryth-*

*rocnemus* group, *S. prominens* is distinguished especially by the apically long median lobe of the aedeagus, and by the shape of the basal internal structure. In addition, it is separated from *S. anatolicus*, *S. distortus*, and *S. erythrocnemus* by the indistinct or obsolete antero-lateral pronotal tubercles, from *S. distortus* and *S. erythrocnemus* by much lighter femoral bases, and from *S. cypriacus* by larger size.

**Distribution:** *Stenus prominens* is known from three localities in Lebanon and Israel.

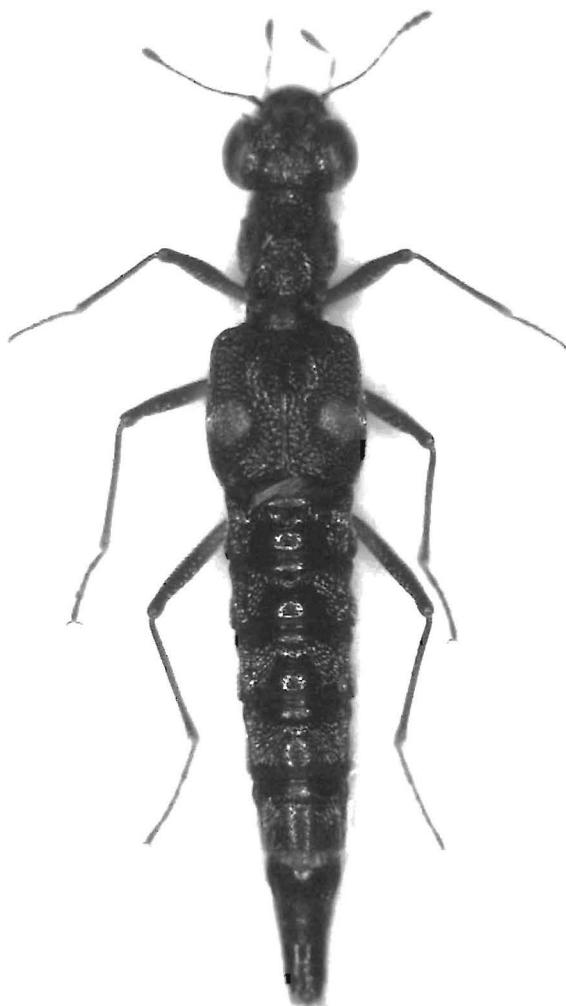


Fig. 7: *Stenus cypriacus* sp. n.

### 3.5. *Stenus erythrocnemus* Eppelsheim (Fig. 5, Map 2)

**Type examined:** Syntype ♀: Lenkoran, Leder (Reitter) / 15. / 10. / c. Eppelsh. Steind. d. / *erythrocnemus* Epp. Typ. / TYPUS (NHMW).

#### Additional material examined:

**Turkey: Artvin:** 5♂♂, 7♀♀, Artvin-Savsat, 4.VI.1989, leg. Schönmann & Schillhammer (NHMW, cPut, cAss); 1♂, Borçka, 27.VI.1970, leg. Schubert (NHMW); 3♂♂

1♀, Borčka, 1700m, 18.-27.VI.1970, leg. Schubert (NHMW, cPut); 6♂♂, Borčka, VII.1971, leg. Schubert (NHMW); 5♂♂, 4♀♀, Borčka, VII.1974, leg. Schubert (NHMW, cPut, cAss); 1♂, pass between Murgul and Arhavi, 1000-1200m, 17.VII.1972, leg. Heinz (cPut). **Rize:** 1♀, Ardeşen, İlica, 20.V.1970, leg. Zwick (cPut); 3♂♂, 3♀♀, Firtina valley, 1300m, leg. Vit (MHNG, cPut, cAss). **Locality not identified:** 1♂, Karçkal – Otingo, 1200-1600m, 10.-12.VII.1983, leg. Heinz (cPut).

**Georgia:** 1♂, Tbilisi, leg. Leder (Reitter) (cPut); 2♂♂, 6♀♀, Zehneti near Tbilisi, 20.VII.1985, leg. Wrase (cPut, cSch). **Abkhazia:** 1♂, Avadkhara, 2000-2800m, 8.-13.VII.1982, leg. Wrase & Schüller (cSch).

**Armenia:** 1♂, 1♀, Gegemskij Chr., Geghard, 2000m, 3.VII.1989, leg. Pütz (cPut).

**Iran:** 9♂♂, 10♀♀, Ilam, Tchaharmelleh, 33°57'N, 46°17'E, 28.VI.1974, leg. Senglet (MHNG, cPut, cAss); 1♂, Teheran, above Shemshale, 2400-2800m, 18.VIII.1967, leg. Heinz (cPut); 1♂, 1♀, Kerman prov., 1964, leg. Löffler (cPut); 1♂, Kermānshāh, Kenesht/Kermānshāh, 34°29'N, 47°09'E, 3.VIII.1973, leg. Senglet (cPut); 2♂♂, Fars, ca. 50 km W Shiraz, Dasht-e-Arshan, 1900m, 21.IX.1997, leg. Schödl (NHMW); 1♂, 1♀, Fars, 30 km N Nurabad, 25.IV.1996, leg. Wewalka (NHMW); 1♂, Fars, Dasht-e-Arjan, 55km NSSK W Shiraz, 22.IV.1993, leg. Pour (cPut); 1♂, 1♀, Ilam, Sarāb Eyyān, 33°45'N, 46°22'E, 26.VI.1974, leg. Senglet (cPut); 4♂♂, 4♀♀, Buyer Ahmad o Kuhgiluye, 30km S Yasug, spring, 25.IV.1996, leg. Wewalka (NHMW, cPut, cAss); 1♂, Qars-i-Shirin, "Fiume ad W terr. nudo limo", 7.IV.1956, leg. Soika (NHMW); 1♂, SW-Iran, Hoseiniyeh, 28km NNW Andimeshk, 360m, 12.-13.IV.1977 (cAss); 1♀, Gilan, Lunak, SW Lāngard, 700m, 2.VII.1998, leg. Heinz (cPut); 1♂, 1♀, SE-Iran, Transhar [?] (NHMW, cPut).

**Pakistan:** 2♂♂, Chitral, Bumburet, 2200-2350m, 24.V.1983, leg. Besuchet & Löbl (cPut).

**Afghanistan:** 1♂, Nurestan, SW Pec-Dara, 1200m, 9.VII.1971, leg. Kabakov (cPut).

**Measurements (mm) and ratios (range, arithmetic mean; n=16):** HW: 0.89 - 0.98, 0.93; PW: 0.66 - 0.74, 0.71; PL: 0.74 - 0.86, 0.79; ML: 0.66 - 0.77, 0.72; HW/PW: 1.25 - 1.38, 1.32; PL/PW: 1.04 - 1.20, 1.12

**Comments:** *Stenus erythrocnemus* is readily distinguished from all the preceding species by the differently shaped median lobe of the aedeagus, which is apically much more abruptly narrowed (Fig. 5). In addition, the elytra are often shorter and narrower, the hind wings sometimes of reduced length (less than twice the length of elytra), and the femoral bases are mostly dark (in this respect similar to *S. distortus*). The Iranian material differs from the specimens seen from northeastern Anatolia and the Caucasus region by the longer apex of the median lobe and the somewhat more slender and more

abruptly bent apex of the basal internal structure of the aedeagus. Slight differences were also observed in the material from Pakistan. However, until the distributions of these morphs are clarified, these differences are here tentatively interpreted as an expression of clinal intra-specific variation.

**Distribution:** The species is distributed from northeastern Anatolia (where its range borders on that of *S. distortus*) and the Caucasus region to Iran, Afghanistan, and Pakistan (Map 2).

### 3.6. *Stenus maculiger* Weise (Figs. 6, 8, Map 3)

#### Material examined:

**Austria:** 1 ex., Niederösterreich, Oberndorf, Pfoisau, 3.VI.1972, leg. Rausch (cPut); 1♂, Kärnten, Zell, Hudjamagraben, 25.VI.-4.VII.1987, leg. Wunderle (cWun); 1♂, Kärnten, Eisenkappel, 1.VIII.1942, leg. Scheerpeltz (MHNG); 1♀, Eisenkappel, 600m, 9.VII.1941, leg. Scheerpeltz (MHNG).

**Italy:** 5♂♂, Carnia, Rio Tagliezzo, 8.&29.XI.1953, 4.VII.1954, 19.III.1957, leg. Springer (cPut); 1♀, Carnia, Rio Squalon, 15.VIII.1954, leg. Springer (cPut).

**Slovakia:** 1♀, Nová Sedlica, 15.VII.1961, leg. Smetana (cPut).

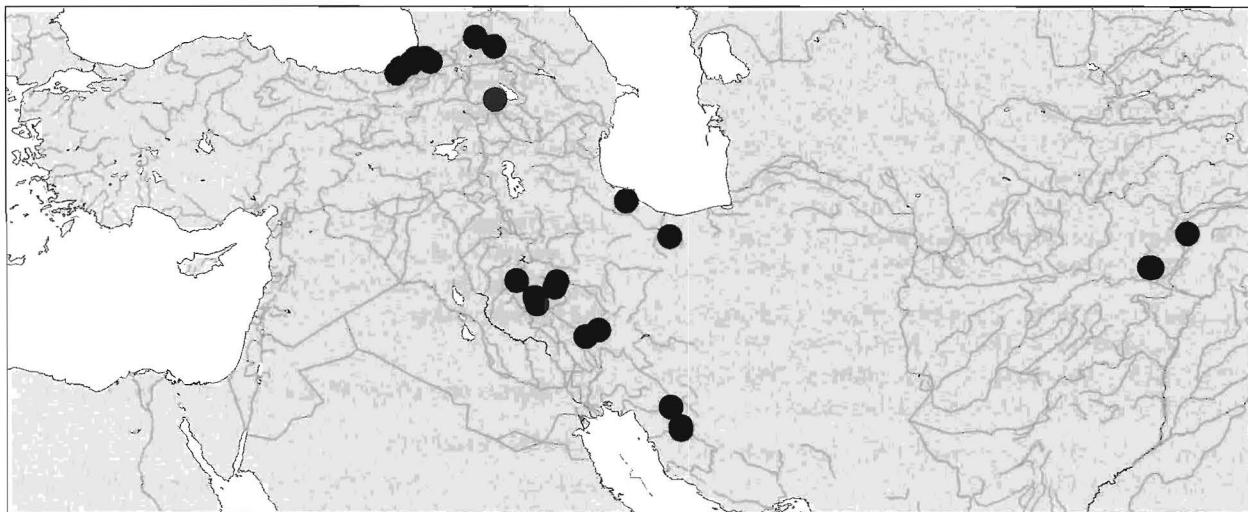
**Hungary:** 1♂, Mecsek range, leg. Gebhardt (cPut).

**Croatia:** 3♂♂, Dubrovnik, Ombla spring, 8.VIII.1958, leg. Endrody-Younga (cPut); 8♂♂, 1♀, 1 ex., SE Dubrovnik, Mlini, 27.IX.-4.X.1968, leg. Benick (MHNG, cPut); 1♀, Dubrovnik (cPut).

**Bosnia-Herzegovina:** 3♂♂, Jablanica (cPut); 1♂, Foča, leg. Apfelbeck (Put); 1♀, Kladanj, 1909, leg. Leonhard (MHNG); 1♀, "Herzegowina", leg. Reitter (MHNG).

**Yugoslavia: Montenegro:** 1♀, Mrtvica near Manastir Morača (cPut); 7♀♀, Manastir env., Morača (cPut); 2♂♂, Miločet, 4.V.1965, leg. Leiler (cPut); 1♀, 10km E Trešnjevik pass, near Andrijevica, 25.V.1979, leg. Zwick (cPut).

**Bulgaria:** 1♀, Nesebár, Vlas, 17.-26.VII.1983, leg. Wrase & Schülke (cSch); 1♀, Eminská planina, Vlas, 12.V.1987, leg. Behne & Heinig (cSch); 1♀, SW-Bulgaria, Sandanski, 27.-28.IV.1985, leg. Wrase (cSch); 2♂♂, SW-Bulgaria, Samokov, 4.V.1966, leg. Löbl (cPut); 1♂, Rila, Bodrovec, 31.VIII.1966, leg. Löbl (cPut); 1♂, SW-Bulgaria, Gospodinci, 3.V.1966, leg. Löbl (cPut); 2♂♂, 1♀, Pirin, leg. Weirather (MHNG); 1♂, Sliven, X.1952, leg. Roubal (MHNG); 1♀, Sliven, 27.VI.1908, leg. Rambousek (MHNG); 1♂, Rhodopi, Pamporovo, 1500m, 28.V.1964, leg. Schulze (cPut); 1♀, Rhodopi, 5km N Schitoka lake, 41°42'N, 24°36'E, 22.VI.1980, leg. Malicky (cPut); 1♀, Katundere, 42°04'N, 27°27'E, 15.VI.1980, leg. Malicky (cPut).



**Map 2:** Distribution of *Stenus erythrocnemus* Eppelsheim, based on examined material. The easternmost records are in Pakistan and Afghanistan.

**Albania:** 2♂♂, Lumi i Bençes, Tepelene, V.1931, leg. Winkler (cPut); 1♂, Dukati (cPut); 1♂, Mirdita, leg. Winneguth (cPut); 2♂♂, Latif, Orosi (cPut); 1♂, Latif, Cukali (cPut).

**Greece: mainland:** 2♀♀, Grevenithion, 39°50N, 21°01E, 5.VI.1975, leg. Malicky (cPut); 1♂, Ladikon, 38°42N, 21°40E, 23.V.1987, leg. Malicky (cPut); 2♂♂, 1♀, Sérres, Hagiai Ioannis, moss, 17.VIII.1964, leg. Puthz (cPut); 1♀, Penday, 38°35N, 22°04E, 3.VI.1975, leg. Malicky (cPut); 1♂, Iti, below Peristeri, 38°51N, 22°10E, 500m, 11.VI.1987, leg. Malicky (cPut); 1♂, Timfristos, 2000m, 8.VII.1982, leg. Osella (cPut); 1♂, Voiotia, Levadia, moss, 4.IX.1964, leg. Puthz (cPut); 1♀, Pelion, 25.III.1981, leg. Wunderle (cWun); 1♂, Pangéo, 26.VII.1988, leg. Jäch (cPut).

**Pelopónnisos:** 3♂♂, 2♀♀, Erimanthos, above Kalendzi, 37°57'02N, 21°46'34E, 1200m, stream bank, 27.III.1997, leg. Wunderle, Assing (cWun, cAss); 3♂♂, 2♀♀, 8km NE Kalavrita, bank of Vouraikos river, 38°04'34N, 22°09'43E, 700m, 30.III.1997, leg. Assing (cAss); 4♂♂, 7♀♀, Parnon range, 1100m, spring, wet moss, 13.VI.1996, leg. Wunderle (cWun, cAss); 2♂♂, Lakonia, Parnon, Polidroso, NE Sparti, 37°10'29N, 22°36'02E, 990m, waterfall, wet moss, 19.IV.1998, leg. Zerche (cAss). **Levkás:** 1♂, Vafkeri, 450m, 26.IX.1993, leg. Assing (cAss). **Andros:** 1♂, 1♀, above Sarisa, 37°51N, 24°54E, 20.IV.1984, leg. Malicky (cPut). **Thássos:** 1♂, Potamias, 13.IX.1991, leg. Jäch (cPut). **Andros:** 1♀, N Andros, 37°51N, 24°56E, 12.VI.1979, leg. Malicky (cPut). **Samothráki:** 4♂♂, 6♀♀, near Kremniotissa church, 40°25N, 25°34E, 24.V.1987, leg. Malicky (cPut); 1♀, 3 km SE Tharma, 14.VI.1993, leg. Jäch (cPut). **Samos:** 1♀, W Karlovasi, 37°48N, 26°41E, 27.V.1979, leg. Malicky (cPut); 1♀, 2km NE Kalithea, 37°45N, 26°36E, 26.V.1979, leg. Malicky (cPut). **Sky-**

**ros:** 1♂, 1km W Skyros, 28.IX.1992, leg. Jäch (cPut).

**Ikaria:** 3♂♂, 5♀♀, W Chrisostomos, 37°35N, 26°13E, 2.VI.1979, leg. Malicky (cPut, cAss); 2♀♀, W Mileopon, 37°39N, 26°14E, 2.VI.1979, leg. Malicky (cPut).

**Rhódos:** 1♂, Petaloudes, 17.V.1966, leg. Leiler (cPut); 2♂♂, Farfalle valley, 12.V.1970, leg. Cerruti (cPut); 1♂, Apollona, IV.1966 (cPut); 1♂, Salakos, 15.IV.1977, leg. Besuchet (MHNG); 1♀, Epta Pigai, 9.IV.1977, leg. Besuchet (MHNG); 2♂♂, 2 exs., Kolimbria, 24.IV.1973, leg. Besuchet (MHNG).

**Ukraine: Crimea:** 7♂♂, 5♀♀, Crimeas reserve, upper part of Katcha river, 800m, 10.V.2000, leg. Ivanov (cPut, cSch, cAss); 1♂, Baidar, leg. Knirsch (cPut); 3♂♂, 2♀♀, Iaila range, leg. Winkler (MHNG, cPut); 1♀, Simferopol (MHNG).

**Turkey: İstanbul:** 7♂♂, 1♀, Istranca Dağ near Demirköy, pass, 700m, 12.VII.1972, leg. Heinz (cPut); 1♂, Beykoz, 1902, leg. Cameron (cPut); 1♂, Şile, 19.V.1987, leg. Schönmann & Schillhammer (cPut); 1♂, 1♀, Kilyos (=Kumkoy), 27.VII.1969, leg. Besuchet (MHNG). **Bolu:** 1♂, forest between Bolu and Yiğilca, 1100m, 18.VI.1987, leg. Heinz (cPut); 5♂♂, 7♀♀, Konuralp-Akçakoca, 400m, 15.V.1976, leg. Besuchet & Löbl (MHNG, cPut); 1♂, Ömerler near Bolu, 800m, 21.V.1976, leg. Besuchet & Löbl (MHNG). **Gümüşhane:** 1♂, Torul, 9.VI.1994, leg. Scoupy (cFel). **Trabzon:** 1♂, Maçka, 1000m, VII.1971, leg. Schubert (cPut). **Adiyaman:** 5♂♂, Nemrut Dağı, Karadut, 14.-19.VII.2000, leg. Smatana (cSch, cPut, cAss). **Diyarbakır:** 3♂♂, 3♀♀, 61km S Bingöl, cave near partly subterranean river, 9.VII.1974, leg. Heinz (cPut, cAss). **Bitlis:** 1♂, S Tatvan, 1700-2000m, 21.V.-18.VI.73, leg. Schubert (cPut). **Hakkari:** 1♂, N Semdinli, 3.VI.1987, leg. Schönmann & Schillhammer (cPut). **Mersin:** 1♀, Haciiskakli, 27.IV.1978, leg. Besuchet & Löbl

(MHNG). **Isparta:** 1♀, Anamasdağı, leg. Weirather (cPut). **Burdur:** 2♂♂, 1♀, Çeltikçi, 850m, 5.V.1975, leg. Besuchet & Löbl (MHNG). **Antalya:** 1♂, 3♀♀, 30km N Finike, W Catallar, 23.5.1991, leg. Schönmann & Schillhammer (cPut); 1♂, 2♀♀, SSW Antalya, Çirali, 36°25'N, 30°28'E, stream bank, 04.IV.2002, leg. Assing & Wunderle (cAss, cWun); 1♀, 3 km W Çirali, 36°25'27N, 30°26'41E, 71m, stream bank, 28.III.2001, leg. Rose (cRos); 1♂, E Kumluca, 36°21'50N, 30°22'27E, 385m, stream bank, 3.IV.2002, leg. Assing & Wunderle (cAss); 1♀, same data, but 25.III.2002 (cAss); 1♂, N Kumluca, Altinyaka, 24.5.1991, leg. Schönmann & Schillhammer (cPut); 1♂, E Antalya, S Akseki, Topraktepe, 30.V.1983, leg. Brachat (cPut); 2♂♂, 1♀, Alanya, Kuzyaka, 180m, stream bank, 12.III.2000, leg. Rose (cRos); 1♂, 2km NW Antalya, 36°31'23N, 30°00'43E, 795m, moist locality with gravel, under bridge, 26.III.2001, leg. Rose (cAss); 2♂♂, 2♀♀, Catallar, 36°29'13N, 30°04'56E, 370m, stream bank, 26.III.2001, leg. Rose (cRos); 1♂, 1♀, 5km E Büyükkalan, 36°43'29N, 30°21'13E, 1352m, roadside, near stream, 27.III.2001, leg. Rose (cRos, cAss); 1♂, 1km N Sögütcumavi, 36°41'51N, 30°22'30E, 1463m, stream bank, 29.III.2001, leg. Rose (cRos); 1♀, N Sagırın, Koprülü Canyon, 37°04'37N, 31°13'56E, 30m, stream bank, 17.III.2002, leg. Rose (cRos); 1♀, 5km NW Kemer, 36°36'03N, 30°29'04E, 197m, river bank, 30.III.2001, leg. Rose (cRos). **Muğla:** 1♂, Baba Dağ ["Salbakos Gbg."], leg. Weirather (MHNG). **Izmir:** 1♀, Izmir (MHNG).

**Comparative notes:** *Stenus maculiger* can be distinguished from *S. anatolicus*, *S. erythrocnemus*, and related species by a completely different shape of the aedeagus (shape and internal structures of median lobe, parameres extending distinctly beyond apex of median lobe, by the presence of a (sometimes very weak or indistinct) median furrow on the pronotum, the much lighter basal halves of the femora, and by the absence of antero-lateral pronotal tubercles (usually absent also in *S. cypriacus* and *S. prominens*). *Stenus sacrimontis* Puthz and *S. bosnicus* Bernhauer have an aedeagus of highly distinctive shape and with completely different internal structures; for illustrations see PUTHZ (1970b).

**Distribution and intraspecific variation:** As is illustrated in Map 3, *S. maculiger* is a typical example of a

Ponto-Mediterranean faunal element. Based on a study of the internal structures of the aedeagi of specimens from various regions, two morphs were recognized, the distribution of one of them ranging from the southeast of Central Europe to Ukraine, southern Greece (including many islands), and Northern Anatolia, and that of the other confined to southern Anatolia (Map 3). The former morph has an aedeagus with an apically long and slender basal structure (Fig. 8, left); in addition, the elytra are often short and only slightly wider than the pronotum, and the hind wings are frequently of reduced length. In the latter morph, in contrast, the basal internal structure is apically stouter and shorter (Fig. 8, middle), the elytra are always distinctly wider and longer than the pronotum, and the hind wings are fully developed. One of the dissected males from Antalya (southern Anatolia), however, was found to have an internal structure (Fig. 8, right), which is apically almost as long and slender as in males e.g. from Greece, suggesting that the observed difference in the shape of the basal structure may not be constant. Both morphs may still represent species or subspecies, but in order to clarify the taxonomic status and rule out the possibility that the differences are merely an expression of intraspecific variation, more material especially from southern Anatolia must be examined.

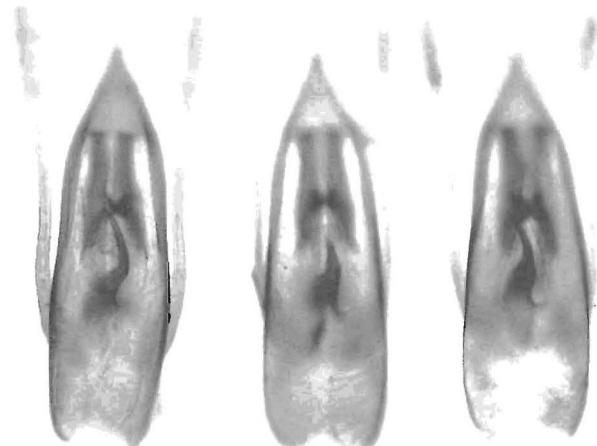
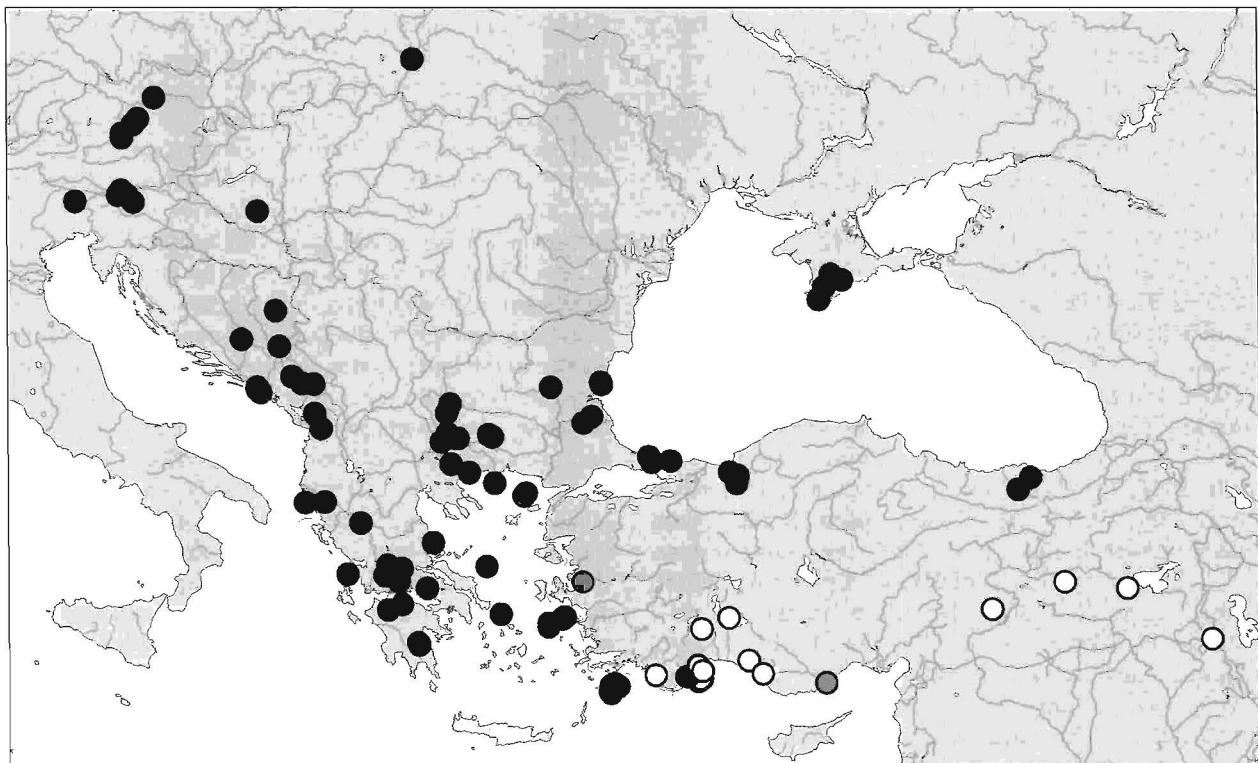


Fig. 8: *Stenus maculiger* Weise. Aedeagi of males from Greece (left) and southwestern Turkey (middle and right).



**Map 3:** Distribution of *Stenus maculiger* Weise, based on examined material, including four records from Austria examined and communicated to me by Volker Puthz. Filled circles: morph with long basal internal structure (Fig. 8, left); open circles: morph with short basal internal structure (Fig. 8, middle); grey circles: records represented only by females.

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